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# INSECTS OF THE GALÁPAGOS ISLANDS (HETEROPTERA, NABIDAE)

By

I. M. Kerzhner

*Zoological Institute of Academy of Sciences of the USSR, Leningrad*

Through the courtesy of Professor R. L. Usinger (University of California, Berkeley, USA) I received for examination a small but interesting collection of Nabidae, taken by the members of the Galápagos International Scientific Project in 1964.

Three species are represented in this material, all belonging to the genus *Nabis* in the strict sense. One of them, *N. consimilis* Reuter, is macropterous and is the only species previously reported from Galápagos Islands (mostly misidentified as *N. punctipennis* Blanchard). Two other species are closely related and both new to science; these species are strongly brachypterous and, according to information from Professor Usinger, inhabit the highest parts of the islands.

Holotypes are deposited in the California Academy of Sciences, San Francisco, California, USA.

**Nabis consimilis** (Reuter, 1912).

*Reduviolus consimilis* Reuter, 1912, pp. 23–25, fig.
*Nabis consimilis*, Remane, 1964, pp. 259–260, figs.
*Nabis punctipennis* (misidentification, not Blanchard, 1852). Heidemann, 1901, p. 366. Barber, 1925, p. 251. Barber, 1934, p. 287. Linsley and Usinger, 1966, p. 135.

Material examined. Santa Cruz Island: Bella Vista, 220 m., 4 and 26 February, 1964, 2 males, 2 females, R. L. Usinger; Miconia belt north of Academy Bay, 1300 feet elevation, 20 February 1964, 1 male, P. D. Ashlock; Floreana Island: Wittmer's Farm, 15 February 1964, 2 males, 1 female, R. L. Usinger.

In addition I have studied two specimens from Peru: a male, vicinity of Pacasmayo, marshy bogs near Pacific Ocean, 19–20 May 1936, F. Woytkowski

(Snow Entomological Museum, University of Kansas, USA); a female, Tingo, August 1918, Cockrell (American Museum of Natural History, New York).

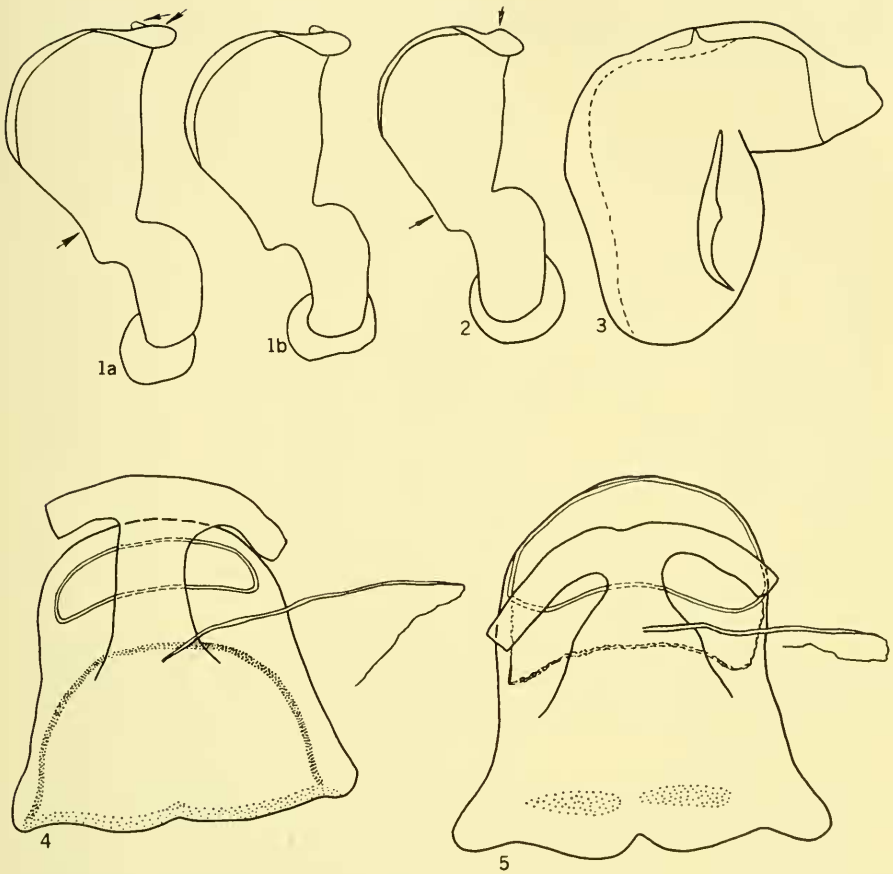
The males from the Galápagos Islands are smaller (length 6.3 to 6.8 mm., width of pronotum 1.3 to 1.45 mm.) than the male from Peru (length 7.3 mm., width of pronotum 1.5 mm.). In the males from Floreana Island the hind wings are somewhat shortened and the membranes of the hemelytra are slightly narrowed. The females from both islands investigated have the hind wings and hemelytra normally developed.

General distribution. Equador (type locality), Peru, Galápagos Islands. Under the correct name, *N. consimilis*, this species is recorded from the Galápagos Islands (without exact locality) by Remane, 1964; this reference is omitted in Linsley and Usinger, 1966. Certainly referable to the same species are the records of *N. punctipennis* Blanchard from the islands Charles (=Floreana), Albemarle (= Isabela) (Heidemann, 1901), and James (= Santiago) (Barber, 1925), also cited in the reviews of Barber (1934) and Linsley and Usinger (1966). The true *N. punctipennis* Blanchard is quite dissimilar to *N. consimilis* in the form of the paramere and belongs to another species group. It is distributed only in southern Chile and southern Argentina, northwards to latitude 30° S.

**Nabis galapagoensis** Kerzhner, new species.
(Figures 1, 3, 4, 6.)

A small brachypterous species. Body covered with very short light adherent hairs; head, scutellum, and ventral surface of abdomen with some longer erect hairs. All coxae with one light seta. Upper surface of body dull.

Coloring sordid testaceous, in females sometimes partly reddish. Antennal segments II apically, III except the base, and IV entirely brown. Head with sides behind and in front of eyes, a longitudinal median line on upper surface, and in some specimens (one male from Santa Cruz Island, all females from Floreana Island) the whole upper surface brown to black. Pronotum and scutellum with a longitudinal fuscous line; in Floreana females also indistinctly embrowned laterally. Dorsal surface of abdomen yellowish, with a longitudinal medium brownish line and lateral brownish markings on pregenital tergite; in the Floreana females all tergites are nearly completely brown or black. Connexivum above yellowish; in females from Floreana Island with a brown or black fascia on fore half or third of each segment; in males and females from Santa Cruz Island only the last segment with dark patches; in males from Floreana Island the connexivum lacks dark markings. Ventral surface of connexivum completely yellowish or, if with obscure fascies, then these are lighter than on dorsal surface and distinct usually only on last segments. Meso- and metasternum laterally and medially brown, sides of prosternum with a brown marking. Venter with a fuscous stripe on each side and a narrow median one, the last sometimes indistinct anteriorly. Femora with brown spots, those on




FIGURES 1–5. Figures 1, 3, 4, *Nabis galapagoensis*, new species; figures 2, 5, *N. reductus*, new species; figures 1, 2, paramere (1a, male from Santa Cruz Island, 1b, male from Floreana Island); figure 3, penis; figures 4, 5, vagina.

apical part of femora larger and often confluent. Tibiae with base and apex brown and frequently with some light brownish spots.

Head distinctly longer than broad. Vertex 1.3 to 1.5 times as broad as one eye. Eyes 2.3 to 3 times as long as postocular part of head. Ocelli small but normally developed, distinctly convex. Antennae shorter than body, segment I equal to or slightly longer than head, segment II longer than I, segment III longest. Rostrum extending on to middle of mesosternum.

Pronotum longer than broad. Hind lobe nearly flat. Fore lobe more or less arched, raised above collar and hind lobe, nearly 2 times as long as hind lobe. Hind lobe nearly smooth or with some very obscure punctures or wrinkles. Hemelytra abbreviated, nearly 2 to 3 times as long as scutellum, corium and

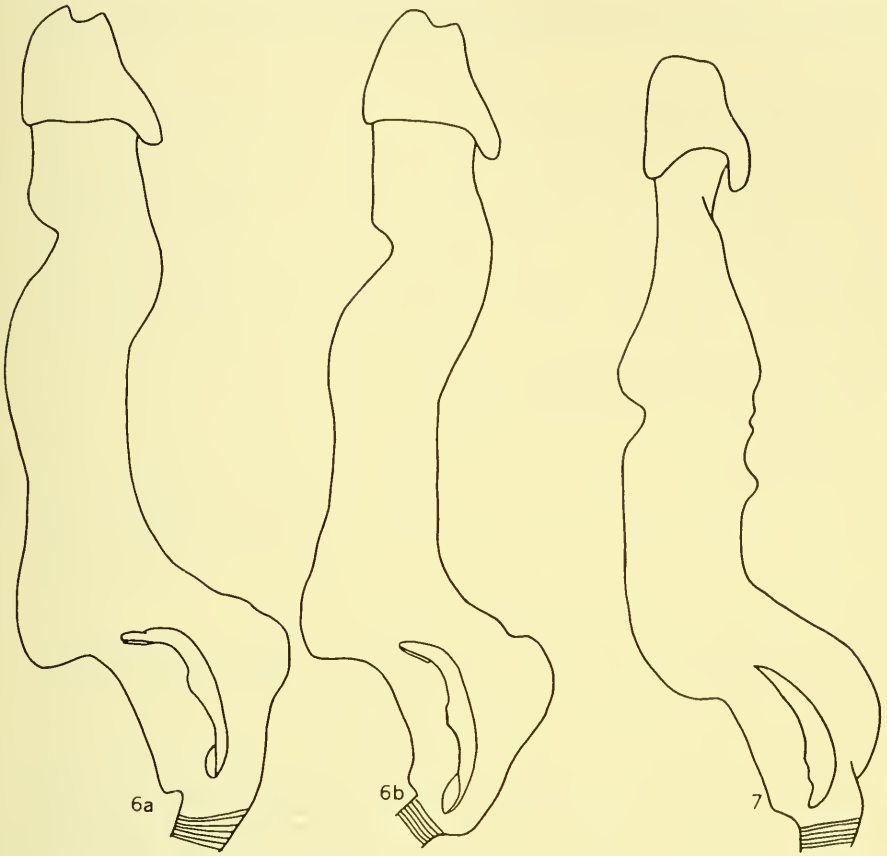
Table I. *Measurements of* Nabis galapagoensis, *new species and* N. reductus, *new species (each unit = 1/70 mm). Two males and two females from each island were measured.*

| | galapagoensis | | | | reductus | |
|---|---|---|---|---|---|---|
| | *Santa Cruz* | | *Floreana* | | *San Cristobal* | |
| | ♂ | ♀ | ♂ | ♀ | ♂ | ♀ |
| Length of head | 67–68 | 80–80 | 67–70 | 75–76 | 62–63 | 62–65 |
| Length of eye | 25–25 | 27–27 | 25–26 | 26–26 | 23–24 | 23–24 |
| Length of postocular part | 10–11 | 12–12 | 10–10 | 11–11 | 8–8 | 9–10 |
| Width of head | 53–53 | 59–59 | 51–51 | 54–54 | 49–49 | 51–51 |
| Width of vertex | 21–21 | 25–25 | 21–21 | 22–22 | 21–21 | 22–23 |
| Width of eye | 16–16 | 17–17 | 15–15 | 16–16 | 14–14 | 14–14.5 |
| Length of pronotum | 73–75 | 90–92 | 72–72 | 80–80 | 65–65 | 70–70 |
| Length of collar | 12–13 | 15–18 | 12–12 | 14–14 | 13–13 | 13–14 |
| Length of hind lobe | 20–20 | 25–27 | 20–20 | 23–24 | 17–17 | 19–20 |
| Width of pronotum basally | 65–67 | 81–83 | 62–64 | 75–75 | 55–60 | 62–62 |
| Length of hemelytra | 72–75 | 100–113 | 80–90 | 90–105 | 67–68 | 72–76 |
| Length of antennal segments I | 65–68 | 70–70 | 65–65 | 68–70 | 64–65 | 62–65 |
| II | 95–95 | 97–98 | 95–97 | 98–105 | 83–87 | 82–87 |
| III | 110–113 | 110–115 | 105–105 | 107–115 | 95–97 | 90–95 |
| IV | 80– ? | 77–77 | 75– ? | 75–80 | 63–70 | 65–75 |
| Length of rostral segments II | 55–60 | 60–65 | 56–60 | 60–60 | 50–50 | 50–55 |
| III | 58–60 | 70–70 | 57–60 | 65–65 | 50–52 | 55–60 |
| Length of fore femur | 140–145 | 155–155 | 135–140 | 142–145 | 130–135 | 135–140 |
| Length of hind femur | 183–183 | 193–195 | 180–180 | 190–190 | 165–170 | 160–165 |
| Length of hind tibia | 210–218 | 233–236 | 210–224 | 215–227 | 192–200 | 192–200 |

clavus fused, hind margin of each hemelytron rounded; membrane very small, without veins, occupying inner half of hind margin of hemelytron. Hind wings scale-like. Ostiolar canal normally developed, directed somewhat posteriorly. Fore femora thickened to basal third. Middle femora almost not incrassated. Legs armed as in other species of *Nabis* strict sense: femora without spines or teeth, fore and middle tibiae with two rows of curved dark denticles and with a spongy fossa. Abdomen in males moderately, in females strongly, enlarged to middle. Connexivum below distinctly separated from abdomen, in outer third with a shallow (male) or deep (female) longitudinal impression.

For detailed measurements see table.

Paramere (figs. 1a, 1b) small, blade nearly semicircular, slightly concave in basal half of hind margin, fore margin with a small transparent laminar projection. Aedeagus (figs. 6a, 6b) with one strongly curved spicula, which is directed with apex toward base of penis (fig. 3), the inner surface of aedeagus covered with very small sharp tubercles (not figured). Bursa copulatrix or vagina (fig. 4) symmetrical, with only one parietal gland lying before apex of vagina; basal part of vagina with a semicircular brownish line; oviducts surpassing apex of vagina.




Figures 6, 7. Figure 6, *Nabis galapagoensis*, new species; 6a, aedeagus of male from Santa Cruz Island; 6b, aedeagus of male from Floreana Island; figure 7, *N. reductus*, new species, aedeagus.

Length, male 4.9 to 5.4 mm.; female, 5.6 to 6.5 mm.; male, 1.1 to 1.2 mm.; female, 1.6 to 2.1 mm.

Distribution. Galápagos Islands (Santa Cruz, Floreana).

Holotype, male. Santa Cruz, north of Academy Bay, grassland, 1800-foot elevation, under *Jaegeria hirta* Lesson, 18 February 1964, P. D. Ashlock. Paratypes, Santa Cruz, same data as holotype, 2 females; Bella Vista, 6 miles north of Academy Bay, 21 February 1964, 1 female, P. D. Ashlock; Floreana: 18 February 1964, 1 male, 1 female, R. L. Usinger; Wittmer's Farm, 15 February 1964, 1 male, 1 female, R. L. Usinger.

Variability. Specimens from Floreana Island are slightly different from those of Santa Cruz Island in the coloring of females and the proportions of the

paramere. Subspecies are however not described, because the material studied is too small and further collections on neighboring islands are possible.

**Nabis reductus** Kerzhner, new species.

Closely related to the preceding species and similar to it in body form and most other morphological details; therefore only differences are described.

Ocelli strongly reduced, only flat reddish traces of these are present. Fore lobe of pronotum, on the average, more flattened. Eyes smaller, antennae, legs and hemelytra usually shorter. Coloring lighter, the dark markings on upper surface indistinct, only the brown marks on pregenital tergite more distinct. Tibiae on apex and on base not darkened, but with distinct brownish spots. Coloring of femora and antennae as in the preceding species. Head below and connexivum always without dark markings.

For detailed measurements see table.

Paramere (fig. 2) smaller, without transparent projection, blade with basal half of hind margin nearly straight. Aedeagus (fig. 7) somewhat different in form and in distribution of spines, spicula feebly curved, gradually narrowed to apex. Bursa copulatrix (fig. 5) with parietal gland broader and lying apically, at middle with a brownish transverse line, with lateral prolongations of parietal gland; oviducts not surpassing apex of vagina.

Smaller than *N. galapagoensis*. Length, male, 4.6 to 4.7 mm.; female, 5.1 to 5.3 mm.; width, male, 1.3 to 1.35 mm.; female, 1.8 to 1.9 mm.

Distribution. Galápagos Islands (San Cristobal).

Holotype, male, and paratypes, 3 males, 2 females. San Cristobal Island: Progresso (Miconia Forest), 23 February, 1964, R. L. Usinger.

Both new species described here are closely related and form a separate group, the affinities of which are not clear. These species differ from all known American *Nabis* (strict sense) in the strong brachyptery. Amongst the Hawaiian species only three: *N. kaohinani* Kirkaldy, *N. paludicola* Kirkaldy, and *N. lolupe* Kirkaldy are strongly brachypterous; all these species differ from *N. galapagoensis* and *N. reductus* in the larger size (length 8.5 to 10.2 mm.) and multiannulate antennal segment II.

## General Remarks on the Nabidae of Pacific Islands

Only members of the subfamily Nabinae are recorded from the smaller Pacific islands (large islands, such as Philippines, New Guinea, New Zealand, are not considered here). They belong to three zoogeographical elements.

The most widely distributed Nabids in Oceania are species of the *Nabis capsiformis* group. This group with only four species has a pantropical distribution. The species are common in nature, as a rule have long wings, probably fly well, and inhabit every open place, including coastal biotopes. Species of this group inhabit nearly all islands in the tropical and subtropical zones of the world, including very isolated islands and small atolls. The majority of Pacific islands

are inhabited by *Nabis capsiformis* Germar; on some western islands this species is replaced by *N. tasmanicus* Remane and in the Galápagos Islands by *N. consimilis* Reuter.

Other important elements of the Oceanian fauna of Nabidae are the endemic species of the genus *Nabis*, belonging to separate species groups. They are found only on some larger islands. The richest is the Hawaiian fauna, which includes 25 described and many undescribed endemic species, very different in external morphology, but possibly originating from a common ancestor (Zimmerman, 1948). Four closely related endemic species are described from the Marquesas, one from Samoa, and two from Galápagos. Among the endemics are both brachypterous and macropterous species.

Finally the western Pacific islands are inhabited by some species of the palaeotropical genera *Arbela* Stål, *Gorpis* Stål, and *Stenonabis* Reuter. The most widely distributed (eastward to Samoa) is the genus *Arbela*, some species of which are endemics on smaller Pacific islands. *Gorpis* is distributed eastward to Fiji and includes two endemics in Oceania. *Stenonabis* is known only from the Solomon Islands (two species, both common with New Guinea and Australia, Kerzhner, in press).

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